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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,566	06/28/2001	Masato Imai	09793822-0149	5465

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EXAMINER	
NGUYEN, HOAN C	
ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 02/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/894,566	IMAI ET AL.	
	Examiner	Art Unit	
	HOAN C. NGUYEN	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 January 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-13* is/are pending in the application.

4a) Of the above claim(s) 2 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

Applicant's arguments with respect to Amended claims 1, 8, 10, and 13 have been considered but are moot in view of the new ground(s) of rejection. Therefore, **this is Final action.**

Applicant cancelled claim 2.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature of "central axis" in claims 8 and 20 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

In Remarks, applicant has explained that the central axis is the axis, which is perpendicular to a point of intersection of the two diagonal lines. How is the central axis perpendicular to a point? What are these two diagonal lines? (Two diagonal lines of the area 15?).

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature "chiral substance is added to said liquid crystals for distorting the state of orientation thereof" in claim 9 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. In all drawings, the liquid crystal cell contains only single liquid crystals with adding chiral substance. How are the liquid crystals distorting the state of orientation with adding chiral substance?

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

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Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 8 -10 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The following features are not disclosed in the original specification:

- "The axially symmetrical orientation is distorted along a central axis" in claim 8.
- "The axially symmetrical orientation is not distorted along a central axis" in claim 10.

Specification discloses ONLY:

- The state of axially symmetrical orientation is distorted along an axis (means any axis and not central axis) perpendicular to the substrate (page 15 lines 18-20).

Therefore the feature "central axis" in claims 8 and 10 is considered as NEW SUBJECT MATTER.

Claims 9 is rejected since it depends on infinitive claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 3, 5, 6, 8, 10 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokuo (JP2000075295) in view of a conventional art admitted by applicant (Figs. 1A-C).

In regard to claims, 1, 3, 6, 10, 12 and 13, Tokuo teaches (Figs. 17-18) a liquid crystal display device comprising:

- a pair of substrates 100/110 arranged facing each other with a pre-set gap in-between;
- liquid crystals 121 held in said gap;
- means for driving a cell (abstract) with applying an electrical field to said liquid crystals to change the state of orientation thereof;
- a groove structure 104 formed in each of small-sized areas obtained on sub-division along at least one substrate for orienting the liquid crystals lying in each small-sized area axially symmetrically on application of said electrical field;

wherein a groove structure encompassing a rectangular area is formed on opposing substrate;

- a groove structure 115L/R formed in each of said small-sized areas and adapted for adjusting the axial symmetrical orientation of said liquid crystals in cooperation with said groove structure formed on opposing substrate .

wherein

- said groove structure is formed for extending along diagonal lines of said rectangular area encircled by groove structure formed on opposing substrate;
- the liquid crystals in each small-sized area are divided into four groups and are oriented symmetrically with respect to an axis perpendicular to a point of intersection of said two diagonals lines according to claim 3;
- said one substrate includes an electrode 111 as means for applying an electronic field to said one substrate; and said groove structure 15R/L is formed in the orientation film 130/140 formed in said electrode 111 itself. The orientation films 130/140 are made of insulating film such as silicon oxide.
- liquid crystals are of negative dielectric constant anisotropy and the surfaces of said two substrates are processed for orientation for orienting said liquid crystals perpendicularly in the absence of applied voltage (col. 10 lines 40-49) according to claim 6.
- the axially symmetrical orientation of said liquid crystals is not distorted along a central axis and display is performed by exploiting ECB mode liquid crystals,

which utilizes birefringence according to claim 10; (col. 10 line 25 to col. 14 line 50).

However, Tokuo fail to disclose in the embodiment according to Figs. 17-18 that

- wall structure encompasses or encircles a rectangular area;
- the axially symmetrical orientation of said liquid crystals is distorted along a central axis and display is performed by exploiting TN mode liquid crystals, which utilizes optical rotating characteristics according to claim 8.

Applicant admits (Figs. 1A-C) that wall structure 17 encompasses or encircles a rectangular area for realizing the state of axially symmetrical orientation of the liquid crystal molecules, which are oriented toward the four side of a rectangular area 15. Nevertheless, the encircling wall structure is formed on substrate has the same function with the encircling groove structure, which is formed on the opposite substrate.

It is well known in the art as Tokuo disclosed (col. 3 lines 5-50) that for increasing color brightness, the display is performed by exploiting ECB mode liquid crystals, which utilize change in the birefringence. However, for increasing contrast ratio with black-white image, the display is performed by exploiting TN mode liquid crystals, which utilize optical rotating characteristics, wherein the axially symmetrical orientation of said liquid crystals is distorted along a central axis according to claim 8.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Tokuo disclosed with (a) wall structure encompasses or encircles a rectangular area for realizing the state of axially symmetrical orientation of the liquid crystal molecules,

which are oriented toward the four side of a rectangular area; (b) the axially symmetrical orientation of said liquid crystals is distorted along a central axis and display is performed by exploiting TN mode liquid crystals, which utilizes optical rotating characteristics for increasing contrast ratio with black-white image according to claim 8.

2. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tokuo (JP2000075295) in view of a conventional art admitted by applicant (Figs. 1A-C) as applied to claims 1 above and in further view in Kojima et al. (US5650867).

It is conventional art that for realizing color display, the color filter is usually formed on the upper substrate, and the transparent electrode is formed directly on the color filter.

However, a conventional art does not disclose the transparent insulating film formed on color filter and a transparent electrode formed on the transparent insulating film.

Kojima et al. teach (Fig. 3) a liquid crystal display device, wherein said one substrate 14 is a transparent plate and a color filter layer 31, transparent insulative film 13 on color filter for protecting color filter, and a transparent electrically conductive layer (electrode 11) formed on one surface thereof.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Tokuo disclosed with color filter formed on substrate for realizing color display,

transparent insulating film on color filter for protecting color filter, and a transparent electrically conductive layer formed on one surface thereof.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tokuo (JP2000075295) in view of a conventional art admitted by applicant (Figs. 1A-C) as applied to claims 1 above and in further view of Nishiguchi (US5978064A)

Nishiguchi teaches (col. 13 lines 8-15) the liquid crystal material and the photopolymerized resin (i.e., the polymer), which results in a liquid crystal display device having excellent display qualities due to the reduction of poorly oriented liquid crystal, thereby stabilizing the state of axially symmetrical orientation produced on application of an electrical field.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the a plasma addressed liquid crystal display device as Tokuo disclosed with a photopolymerizable resin is added to said liquid crystals for excellent display qualities due to the reduction of poorly oriented liquid crystal, thereby for stabilizing the state of axially symmetrical orientation produced on application of an electrical field.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tokuo (JP2000075295) in view of a conventional art admitted by applicant (Figs. 1A-C) as applied to claims 1 above and in further view of Horie (US6226056B1).

Horie teaches (Fig. 8, col. 12 lines 30-45) a plasma addressed liquid crystal display device, wherein said means for applying the electrical field is made up of signal

electrodes 8 formed in columns on one substrate 10 and discharge channels 17 formed in rows in the other substrate 4, said discharge channel being separated from said liquid crystals by a dielectric sheet 6.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Tokuo disclosed with said means for applying the electrical field is made up of signal electrodes formed in columns on one substrate and discharge channels formed in rows in the other substrate, said discharge channel being separated from said liquid crystals by a dielectric sheet for providing a plasma switching.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN
Examiner
Art Unit 2871

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February 21, 2003